12

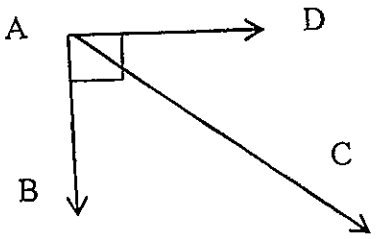
CW#~~10~~: Missing Angles
Geometry

Name: Key TP: ____

CRS	PPF 402 Exhibit knowledge of basic angle properties and special sums of angle measure (e.g., 90, 180 and 360)
Objective	2.4 Find the missing angle in a complex figure or description using angle pair relationships

Angle Review

1.) List 3 out of the 6 angles and name their classification (acute, obtuse, right, straight):



∠DAB, right ; ∠DAC, acute ; ∠BAC, acute

Roof trusses can have several different layouts. The diagram below shows one type of roof truss made out of beams of wood. Use the diagram to identify two different examples of the indicated type of angle pair. In the diagram, ∠*HBC* and ∠*BCE* are right angles.

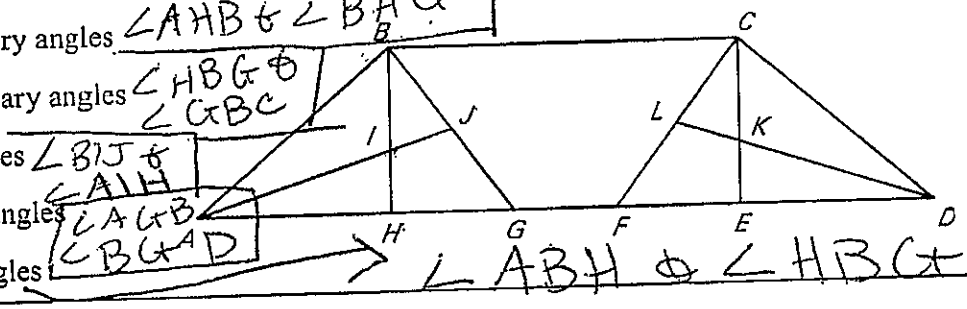
Supplementary angles ∠AHB & ∠BHG

Complementary angles ∠HBG & ∠GBC

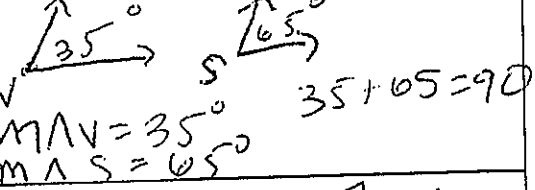
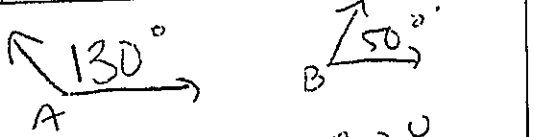
Vertical angles ∠BIJ & ∠AIH

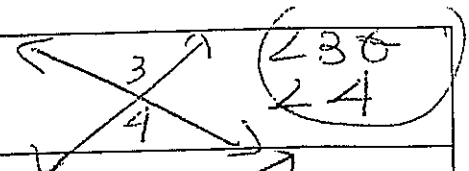
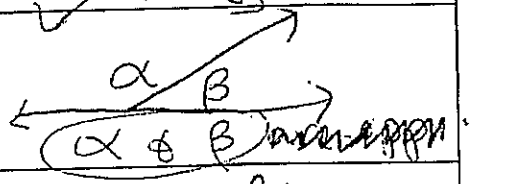
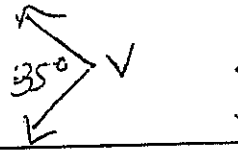
Linear pair angles ∠AGB & ∠BGD

Adjacent angles ∠ABH & ∠HBC



Vocabulary Review

Angle/Relationship	Definition	Example
Complementary angles	the sum of the two angles = 90°	 m∠V = 35° m∠S = 65° 35 + 65 = 90
Supplementary angles	their sum is equal to 180°	 A + B = 180°

...rtic... angles	the sides of the angles form 2 pairs of opposite rays	
Linear pair	two adjacent angles whose noncommon sides are opposite rays	
Congruent angles	 V ≅ B	If the angle measures are the same

We also know that there are 360° **in a full circle or rotation.**

Steps to solving for a missing angle in a complex figure or description:

Step 1: Locate the angle you are asked to find.

Step 2: Identify the information you have already been given.

Step 3: If necessary, draw a diagram/picture

Step 4: Draw/put into the figure other information that you know.

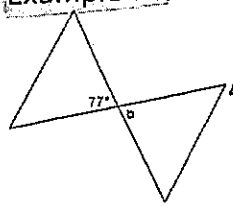
Step 5: Using all of this information, Solve.

12

CW#~~10~~: Missing Angles
Geometry

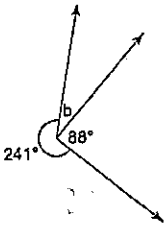
Name: Key TP: ____

Example 1: Find the measure of b.



$\angle b = 77°$

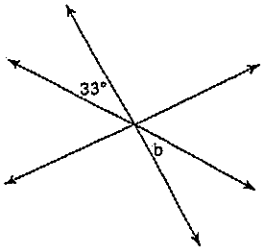
Example 2: Find the measure of b.



$\angle b = 31°$

You Try!

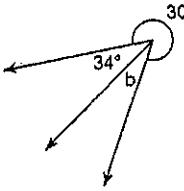
1. Find the measure of b.



$\angle b = 33°$

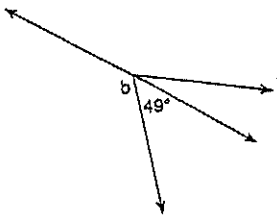
You Try!

2. Find the measure of b.



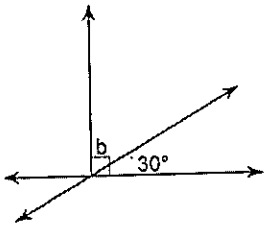
$\angle b = 26°$

Example 3: Find the measure of b.



$\angle b = 131°$

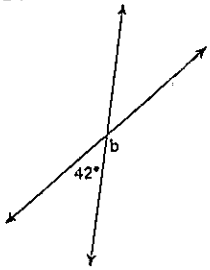
Example 4: Find the measure of b.



$\angle b = 60°$

You Try!

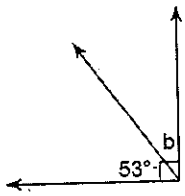
3. Find the measure of b.



$\angle b = 138°$

You Try!

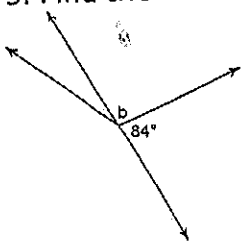
4. Find the measure of b.



$\angle b = 37°$

You Try!

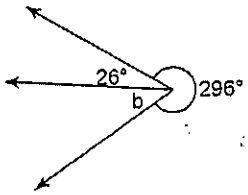
5. Find the measure of b.



$\angle b = 96^\circ$

You Try!

6. Find the measure of b.



$\angle b = 38^\circ$

Example 5:

Name the measure, in degrees, of the following angle on a clock.

150°

Example 6:

What is the measure, in degrees, of the angle between the hands of a standard clock and exactly 4:00?

120°

You Try!

7. Name the measure, in degrees, of the following angle on a clock.

30°

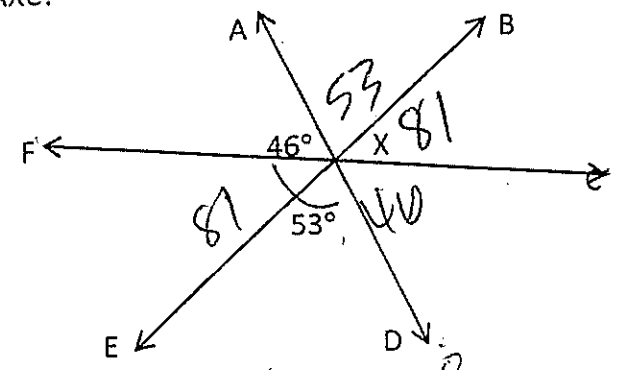
You Try!

8. What is the measure, in degrees, of the angle between the hands of a standard clock and exactly 3:00?

90°

Example 6:

In the figure below, all lines intersect at point X with angle measures as marked. What is the measure of $\angle AXC$?



$m\angle AXC = 136^\circ$

You Try!

9. In the same figure, what is the measure of $\angle FXE$?

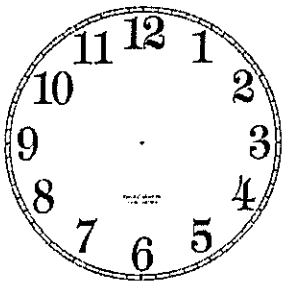
$m\angle FXE = 81^\circ$

You Try!

10. In the same figure, what is the measure of $\angle FXD$?

$m\angle FXD = 81 + 53 = 134^\circ$

11. Find the measure, in degrees, of the following times.



a. Exactly 2:00

60°

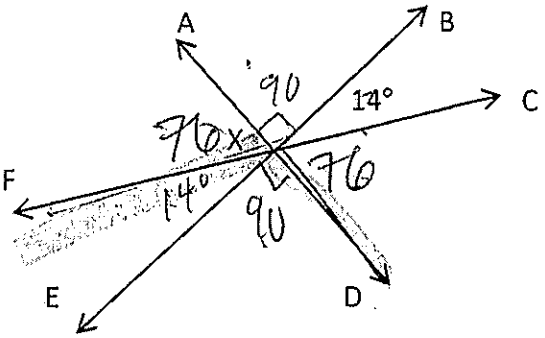
b. Exactly 6:00

180°

c. Exactly 1:00

30°

12. In the figure below, all lines intersect at point X with angle measures as marked. Find the measurement of the following angles.



a. ∠FXA

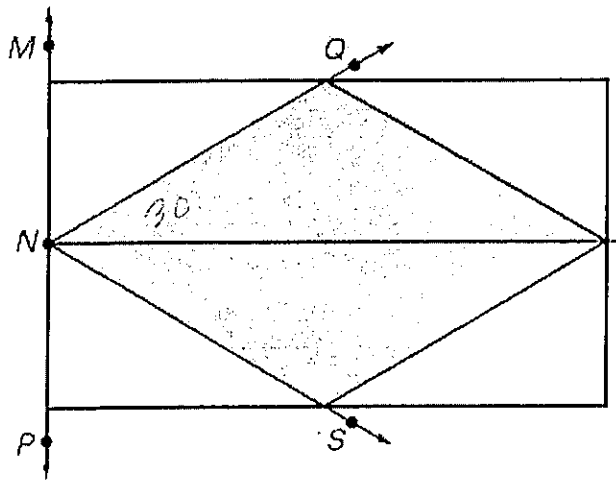
76°

b. ∠FXD

104°

Challenge

In the flag shown, $\angle MNP$ is a straight angle and $\overrightarrow{NR}$ bisects $\angle MNP$ and $\angle QNS$.



a. Which angles are acute? obtuse? right?

acute ∠QNR, ∠RNS ∠SRN, ∠1

obtuse = ∠QNP, ∠SNM

right = ∠RNP

b. Identify the congruent angles.

∠MNR, ∠PNR,

∠QNS, ∠SNR

c. If $m\angle QNR = 30°$, find $m\angle MNR$, $m\angle RNS$, $m\angle QNS$, and $m\angle QNP$.

m∠MNR = 90° m∠RNS = 30° m∠QNS = 60°

m∠QNP = 120°

13

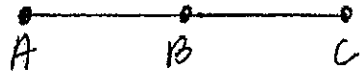
CW#~~105~~: Angle Addition Postulate
Geometry

Name: Key TP: ____

CRS	Geometry Content
Objectives	2.5 Use the angle addition postulate 2.6 Use the angle addition postulate for bisecting angles

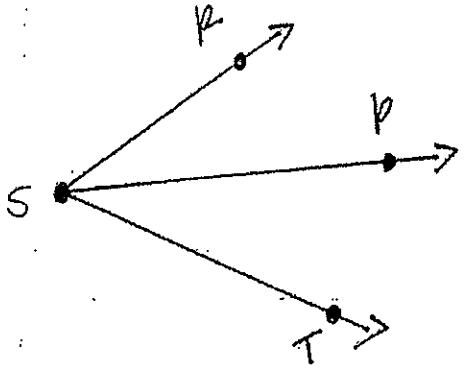
~~CW#105~~ Angle Addition Postulate

Review: Segment Addition Postulate:



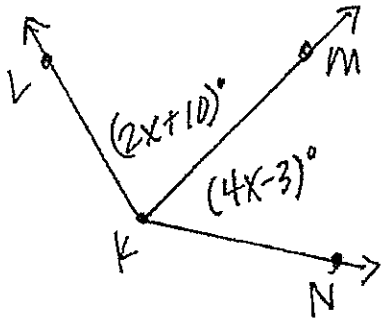
$\overline{AB}+\overline{BC}=\overline{AC}$

same idea, but now angles: Angle Addition Postulate



$\angle RSP+\angle PST=\angle RST$

Ex 1: If $m\angle LKN=145°$, find $m\angle LKM$ and $m\angle MKN$



$2x+10+4x-3=145$
$6x+7=145$
$6x=138$
$6 \quad 6$
$x=23$

$m\angle LKM = 2(23)+10$
$46+10$
$56°$

$m\angle MKN = 4(23)-3$
$= 92-3$
$= 89°$

PUSH IT TO THE LIMIT.

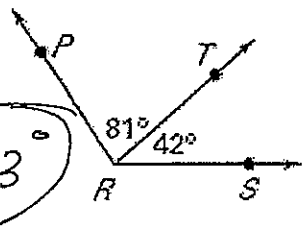
13

CW#~~10B~~: Angle Addition Postulate
Geometry

Name: Key TP: ____

Example 1:

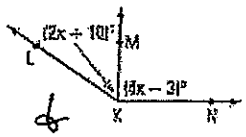
$m\angle PRS$ = ?



$81 + 42 = 123°$

$m\angle PRS = 123°$

Example 3, p. 26



$2LKN = 145°$

find $\angle LKM$ & $\angle MKN$

$2x+10+(4x-3) = 145$

$6x + 7 = 145$

$6x = 138$

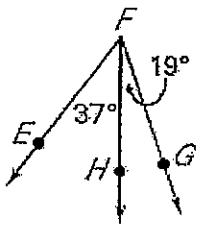
~~$x = 23$~~

$LKM = 56$

$MKN = 89$

You Try 1:

$m\angle EFG$ = ?



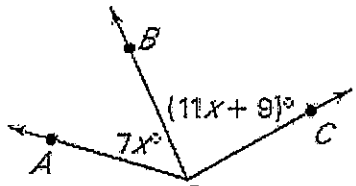
~~$\angle A \cong \angle F$~~

$37 + 19 = 56°$

$m\angle EFG = 56°$

You Try 2:

Given $m\angle ADC = 135°$, find $m\angle BDC$.



$7x + 11x + 9 = 135$

$18x = 126$

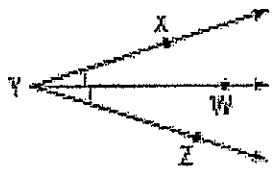
$x = 7$

$\angle BDC = 11x + 9$

$\angle BDC = 77 + 9$

$= 86°$

Example 5, p. 28



$\angle XYW = 18°$

$\overrightarrow{YW}$ bisects $\angle XYZ$

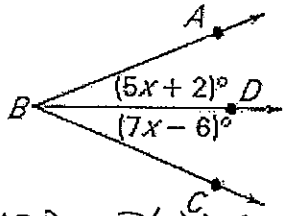
$\angle XYZ = 18 \cdot 2$

$36°$

Example 2:

$\overrightarrow{BD}$ bisects $\angle ABC$

Find $m\angle ABC$



$5x + 2 = 7x - 6$

$-2x = -8$

$x = 4$

$\angle ABD = 5(x) + 2$

$5(4) + 2 = 22$

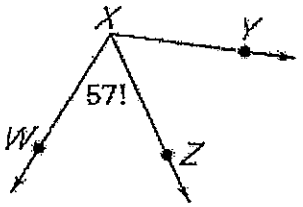
$22 \cdot 2 = 44$

$m\angle ABC = 44°$

PUSH IT TO THE LIMIT.

You Try 1:

$\overline{XZ}$ bisects $\angle WXY$



a. Find $\angle ZXY$

$\angle ZXY = 57°$

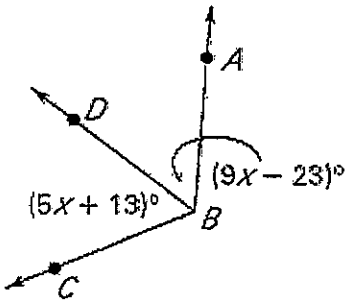
b. Find $\angle WXY$

$\angle WXY = 57 \cdot 2 = 114°$

You Try 2:

$\overrightarrow{BD}$ bisects $\angle ABC$

Find $m\angle ABC$



$5x + 13 = 9x - 23$

$-4x = -36$

$x = 9$

$\angle DBC = 5x + 13 = 58°$

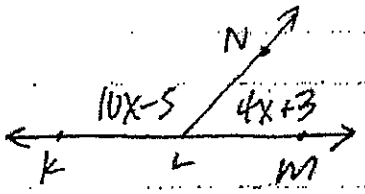
$58° \cdot 2 = 116°$

$m\angle ABC = 116°$

PUSH IT TO THE LIMIT.

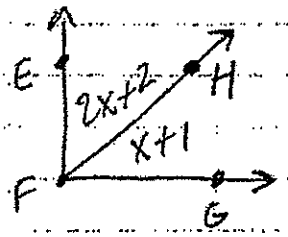
Guided Practice P. 26 #3 & #4

3.)



$X = 13$ $\angle KLN = 125°$
$\angle NLM = 55°$

4.)

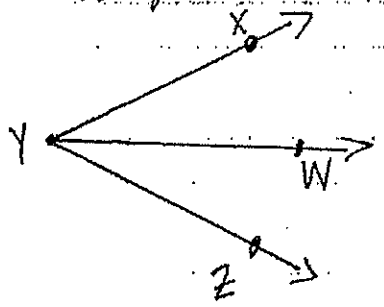


$X = 29$ $\angle EFG = 60°$
$\angle HFG = 30°$

P. 29 #22-27

22.) 99°
23.) 65°
24.) 101°
25.) 55°
26.) 135°
27.) $X = 27$, (A)

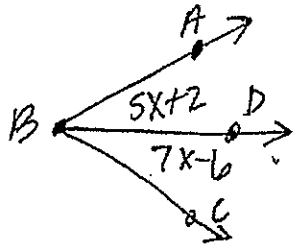
Angle bisector: an angle bisector is a ray that divides an angle into 2 congruent angles



$\overrightarrow{YW}$ bisects $\angle XYZ$

$\angle XYW \cong \angle WYZ$!

EX 3: $\overrightarrow{BD}$ bisects $\angle ABC$. Find $m\angle ABC$



$5x+2 = 7x-6$

$8 = 2x$

$x = 4$

$5(4)+2$ $\quad$ $7(4)-6$

$20+2$ $\quad$ $28-6$

22 $\quad$ $+\ 22$

$\boxed{44^\circ}$

p. 30 #29-31, #40-42

29.) $\angle ZWY = 52^\circ$

$\angle XWY = 104^\circ$

30.) $\angle XWZ = 68$

$\angle XWY = 136^\circ$

31.) $\angle ZWY = 71$

$\angle XWY = 142^\circ$

40.) $x = 20 \rightarrow 156^\circ$

41.) $x = 10 \rightarrow 80^\circ$

42.) $x = 100 \rightarrow 134^\circ$

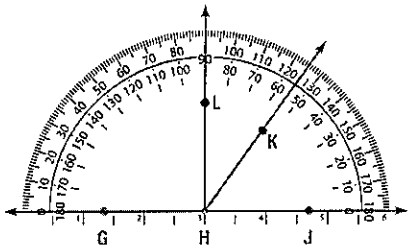
Name: _____ TP: _____

CW#14: Quiz 3 Review
Geometry

CRS	PPF 301 – Exhibit some knowledge of the angles associated with parallel lines (B3.1) PPF 401 – Find the measure of an angles using properties of parallel lines (B3.2) PPF 501 Use several angle properties to find an unknown angle measure
Objective	2.7 Identify the angles that are created when two parallel lines are intersected by a transversal 2.8 Use parallel line and transversal angle theorems to solve for the missing angle 2.9 Find the measure of a missing angle using complementary, supplementary, vertical, and parallel lines cut by a transversal angle properties *Review All Unit 2 Objectives*

CLASSROOM COPY. DO NOT WRITE ON.

Classify/Name/Measure Angles



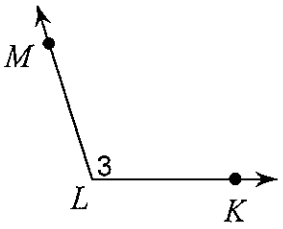
1) What is the vertex of all angles formed? H

2) True or False: ∠KLH is pictured in the figure above.

3) ∠LHK and ∠KHJ are:

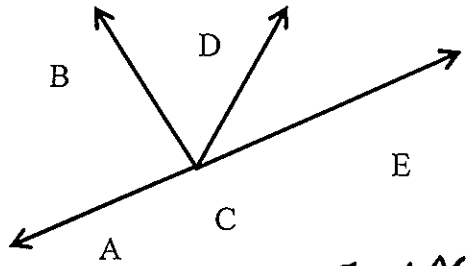
a) Nonadjacent, supplementary angles
b) Adjacent, supplementary angles
c) Nonadjacent, complementary angles
d) Adjacent, complementary angles.

4) Choose the wrong name for this angle:



A) ∠MLK B) ∠LMK
C) ∠L D) ∠3

5)

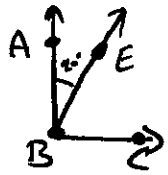


a) Name all obtuse angles. ∠DCE, ∠ACD

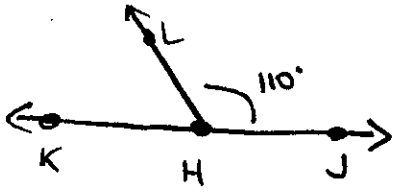
b) Name all acute angles. ∠BCD, ∠DCE, ∠BCA

c) List an adjacent, supplementary pair of angles.
∠ACB, ∠BCD, ∠DCE

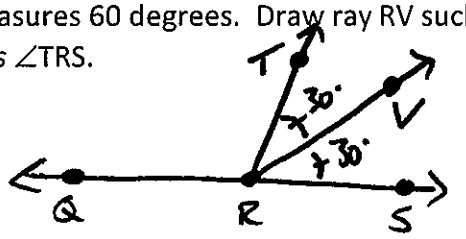
6) Draw a right angle ∠ABC. Draw ray BE such that ∠ABE measures 20°.



7) Draw a straight angle: ∠KHJ. Draw ray HL such that ∠LHJ measures 110°.



8) Draw a straight angle∠QRS. Draw ray RT such that ∠TRS measures 60 degrees. Draw ray RV such that RV *bisects* ∠TRS.

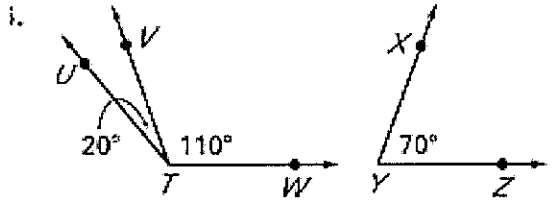


STAY READY

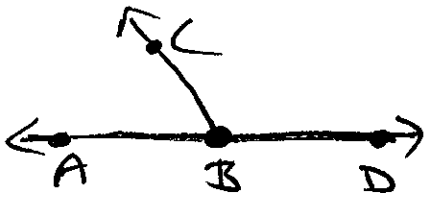
9) Name a pair of complementary angles and a pair of supplementary angles.

Comp: UTV & XYZ

Sup: VTW & XYZ

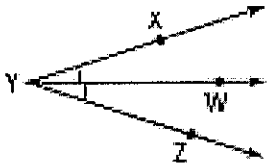


10a) Draw acute ∠ABC. Draw an adjacent obtuse angle ∠CBD that is supplementary to ∠ABC.



Angle Addition Postulate / Find Missing Angles / Angle Pair Relationships

11) In the diagram below, ray YW bisects ∠XYZ. ∠XYW measures 2x + 24 degrees and ∠WYZ measures 4x degrees.

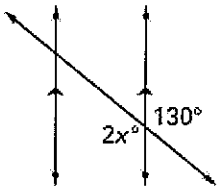


x = 12

12)

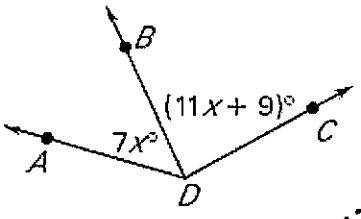
a) What is the angle relationship?

b) What is the value of *x*?



x = 65

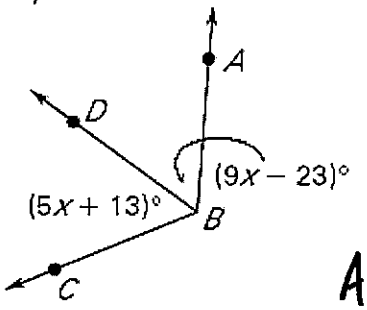
13) Given $m\angle ADC = 135°$, find $m\angle BDC$.



x = 7

∠BDC = 86°

14) $\overrightarrow{BD}$ bisects ∠ABC. Find m∠ABC



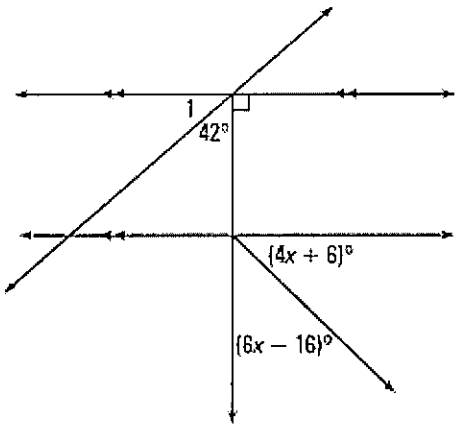
x = 9

ABC = 116°

15) ∠ADC measures *3x* degrees, and is supplementary to ∠CDE, which measures *2x+10*. What is the measure of *x*?

x = 34

16)



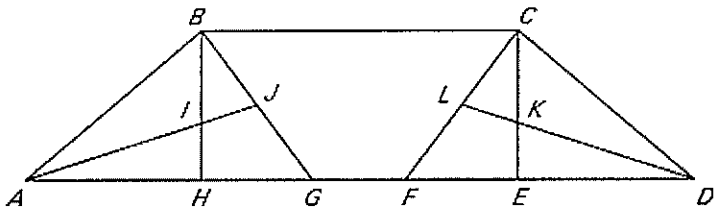
a) Solve for *x*. x = 10

b) Solve for ∠1. ∠1 = 48°

STAY READY

17)

Roof trusses can have several different layouts. The diagram below shows one type of roof truss made out of beams of wood. Use the diagram to identify two different examples of the indicated type of angle pair. In the diagram, $\angle HBC$ and $\angle BCE$ are right angles.



33. Supplementary angles
AGB, BGF
... lots

34. Complementary angles
IBJ & JBC

35. Vertical angles
AIH & BIJ

36. Linear pair angles
GFL, LFE

37. Adjacent angles CLK, KLF

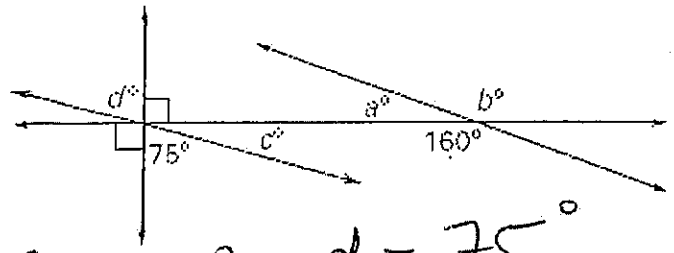
PREPARE FOR YOUR EXIT SLIP. YOUR TEACHER WILL SELECT WHICH PROBLEM(S) YOU ARE TO COMPLETE IN PREPARATION FOR YOUR QUIZ TOMORROW

STAY READY

Name: Key TP: _____

HW#~~10~~13: Angle Addition Postulate
Due Date: Monday, Sept. 24th, 2012

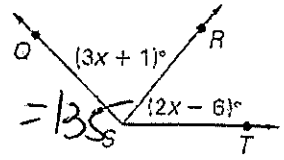
1. Use the diagram below to find the measure of $a°$, $b°$, $c°$ and $d°$.



$a = 20°$ $d = 75°$

$b = 160°$ $c = 15°$

2. Given $m\angle QST = 135°$, find $m\angle QSR$.



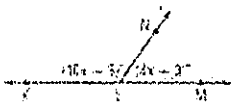
$3x+1+(2x-6)=135$

$5x-5=135$

$5x=140 \Rightarrow x=28$

$\angle QSR = 3(28)+1 = 85°$

3. Find $\angle KLN$ and $\angle MLN$.



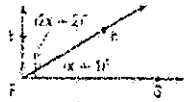
$10x-5+4x+3=180$

$14x-2=180 \Rightarrow 14x=182$

$x=13$

$\angle KLN = 130-5 = 125°$ $\angle MLN = 55°$

4. Find $\angle EFH$ and $\angle HFG$.



$2x+2+x+1$

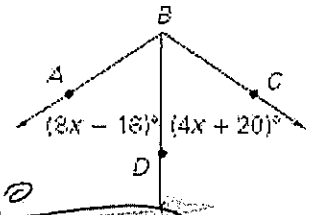
$3x+3=90$

$3x=93$

$x=93/3=31$

$\angle EFH = ?$

5. BD bisects $\angle ABC$. Find $m\angle ABC$.



$8x-16=4x+20$

$4x=36$

$x=9$

$8(9)-16=56°$

$\angle ABC = 56° \cdot 2 = 112°$

6. Draw an angle that fits the description:

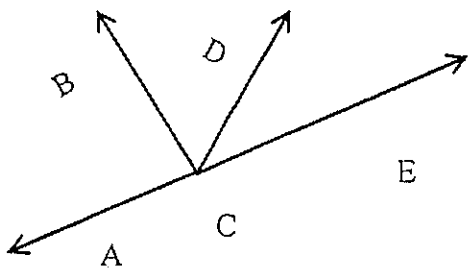
a. acute

b. obtuse

c. straight

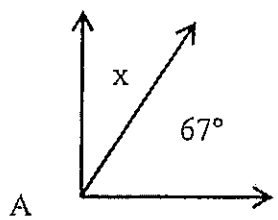
d. right

7. Name all the angles in the diagram



1. $\angle ACB$	2. $\angle BCD$	3. $\angle DCE$
4. $\angle ACD$	5 $\angle DCE$	6. $\angle ACE$

8. If $m\angle A = 90°$ find x.

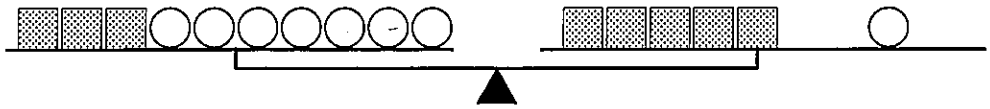


$90-67=23°$

$x=23°$

GRASP REVIEW! *(Mind the GAP with complete sentences!)*

Use the *balance diagram* below to find how many marbles it takes to balance one cube.



G The goal is to find out how many marbles it will take to balance one cube.

R Balance means equal.
3 cubes on left + 7 marbles } 5 cubes and 1 marble on right

A I will set up an equation and solve for cubes so that I know how many marbles it will take to balance one cube.

S

$$3c + 7m = 5c + m$$
$$-3c \quad -m \quad -3c \quad -m$$

$$\frac{6m}{6} = \frac{2c}{2} \rightarrow m = \frac{1}{3}\text{ cube}$$

$$\frac{6m}{2} = \frac{2c}{2}$$

$$\boxed{3m = 1c}$$

P You need 3 marbles to balance out one cube. I know this is right because if I go back to the equation and sub these #'s in I get a true statement

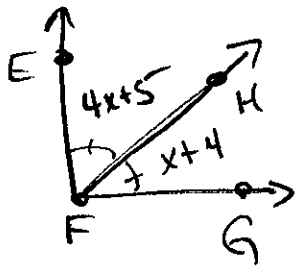
$$3(3m) + 7m = 5(3m) + m$$
$$9m + 7m = 15m + m$$

Name: _____ TP: _____

HW#14: Quiz 3 Review
Geometry
Due Date: Thursday, Sept. 26th, 2012

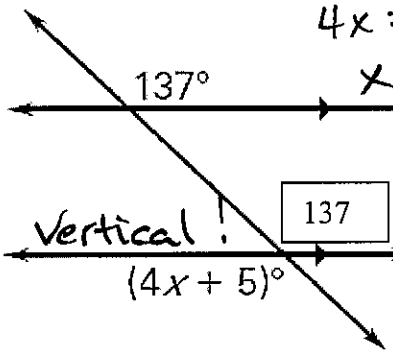
Failure to show work on all problems or use complete sentences will result in a LaSalle.

1. Angle EFG has a measure of 90 degrees. Ray FH bisects angle EFG. Angle EFG is represented by the expression 4x+5 and angle HFG is represented by the expression x+4. Find the value of x.



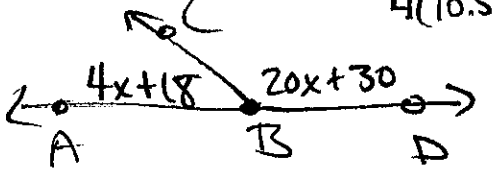
$4x+5 = x+4$
$-x-5 \quad -x-5$
$\frac{3x}{3} = \frac{-1}{3}$
$x = -1/3$ or $-.333$

2. In the figure below, lines *l* and *m* are parallel. Find the value of *x*.



$4x+5 = 137$
$4x = 132$
$x = 33$

3.
Angle ABC and angle CBD are linear pairs. Angle ABC is represented by the expression 4x + 18 and angle CBD is represented by the expression 20x +30. Find the measurement of angle ABC.



$4x+18+20x+30 = 180$
$24x + 48 = 180$
$x = 10.5$

$4(10.5)+18$
$60°$

4. Define all angle relationships we've learned so far.

Compl
↳ sum to 90

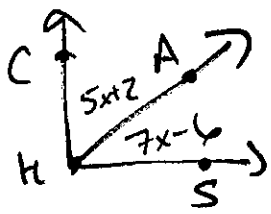
Sup
↳ sum to 180°

Vertical
↳ congruent

Linear

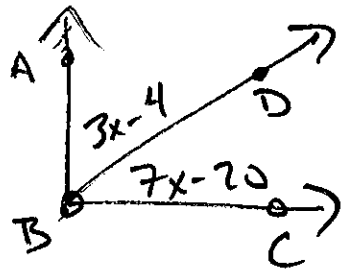
Adj

5. Angle CHA and angle AHS are complementary. If angle CHA is represented by the expression 5x+2 and angle AHS is represented by the expression 7x-6, what is the value of x?



$5x+2+7x-6 = 90$
$12x - 4 = 90$
$12x = 94$
$x = 7.83$

6. $\overrightarrow{BD}$ bisects $\angle ABC$. The measure of $\angle ABD$ is 3x – 4 degrees, and $m\angle DBC$ is 7x – 20. What is the measure of each angle? (DRAW a picture).



$3x-4 = 7x-20$
$-3x+4 \quad -7x+4$
$-4x = -16$
$x = 4$

$3(4)-4$
$12-4$
$8°$

STAY READY

GRASP REVIEW! *(Mind the GAP with complete sentences!)*

With the given endpoints (2,5) and (4,9) and the midpoint being on a perpendicular bisector, what is the equation of the line that goes through the original two points, and what is the equation of the perpendicular line that goes through the midpoint?

G EQUATION OF ORIGINAL AND PERP LINE.

R (2,5) (4,9)

$\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}$

A . . . $MP = \frac{2+4}{2}, \frac{5+9}{2}$

3, 7

S $\frac{9-5}{4-2} = \frac{4}{2} = 2 : m$

$y - 5 = 2(x-2)$

$y - 5 = 2x - 4$

$+5 \quad +5$

ORIGINAL $\boxed{y = 2x + 1}$

$\perp m = -\frac{1}{2}$

pt (3,7)

$y - 7 = -1/2(x-3)$

$y - 7 = -1/2x + 1.5$

$\boxed{y = -1/2x + 8.5}$

P

STAY READY

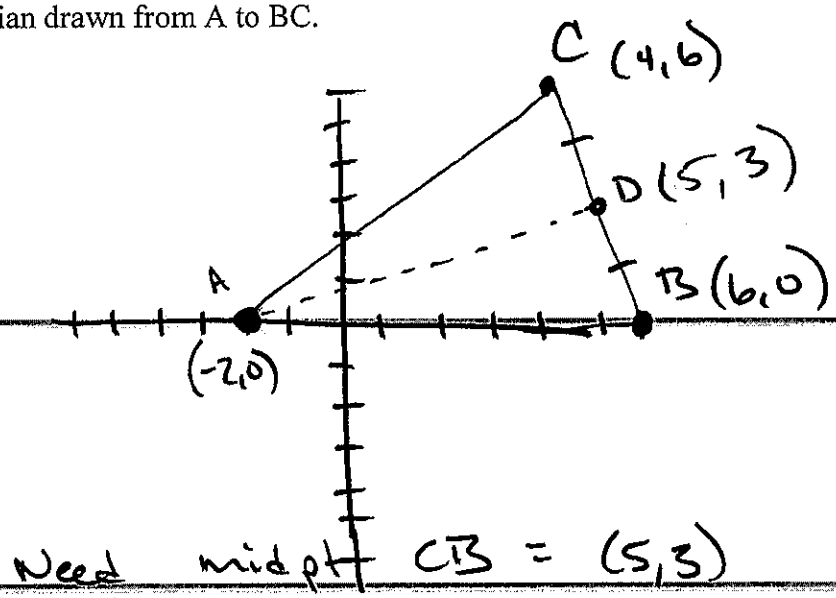
HW#15: GRASP
Due Date: MONDAY Sept. 30th, 2013

Name: _____ TP: _____

GRASP REVIEW! *(Mind the GAP with complete sentences!)*

A segment from one of the vertices of a triangle to the midpoint of the opposite side is called a median. Consider the triangle defined by A = (−2, 0), B = (6, 0), and C = (4, 6). Find an equation for the line that contains the median drawn from A to BC.

G



R

Need midpt CB = (5,3)

Need slope $\frac{y_2-y_1}{x_2-x_1} = \frac{3-0}{5+2} = \frac{3}{7}$

A

$y-y_1 = m(x-x_1)$

$y-3 = 3/7\,(x-5)$

S

$y-3 = 3/7x - 2.1428$

$+3 \qquad +3$

$y = 3/7x + 1.1428$

P

GRASP REVIEW! *(Mind the GAP with complete sentences!)*

There are 396 persons in a theater. If the ratio of women to men is 2:3 and the ratio of men to children is 1:2, how many men are in the theater?

G

R

396 people

$W:M = 2:3$

$M:C = 1:2$

$\frac{W}{M} = \frac{2}{3}$

$\frac{M}{C} = \frac{1}{2} \cdot \frac{3}{3} = \frac{3}{6}$ M:C 3:6

A

$W:M:C = 2:3:6$

$2x + 3x + 6x = 396$

$11x = 396$

$x = 36$

S

$M = 36(3) =$ **108 men**

$W = 36(2) = 72$ women

$C = 36(6) = 216$ children

396 TOTAL ☺

P